

Notice of Allowability

Application No.

10/058,169

Examiner

Mary Cheung

Applicant(s)

LEE ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 20 December 2004.
2. ☒ The allowed claim(s) is/are 52-85.
3. ☒ The drawings filed on 25 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Terminal Disclaimer

1. The terminal disclaimer filed on December 20, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on U. S. Patent Number 6,363,381 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

2. Claims 52-85 are pending. Claims 52-85 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The two closest related prior art are Jain (U. S. Patent 5,893,095) and Peairs (U. S. Patent 5,867,597). Jain teaches content-based search and retrieval of visual objects, a specific schema implies specific set of visual features to be processed and a corresponding feature vector to be used for content-based similarity scoring, and a distance between two feature vectors is computed in any of the comparison processes so as to generate a similarity score. Peairs teaches an improved document management system with high-speed retrieval by example retrieves a document attaching a target document, in whole or part, by comparing descriptors of documents.

In regarding to independent claims 52, 55-56, 69 and 72-73, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest generating a set of descriptors based on distances between selected up endpoints and the selected down endpoints within the text lines in a document, and identifying text lines in the document based on concentration of up endpoints and down endpoints along with scanlines of the document comprising determining the number of

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up endpoints and the number of down endpoints that lie on each of the scanlines and identifying respective pairs of scanlines that have a local maximum number of up endpoints and a local maximum number of down endpoints as text lines.

In regarding to independent claims 53 and 70, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest comparing a set of descriptors for a document against respective sets of descriptors for the one or more candidate documents to determine if the document matches at least one of the one or more candidate documents, performing spectral analysis on the bit profile of the document to determine global statistics of the query document, and comparing the global statistics of the query document against global statistics associated with a second plurality of documents from the data base to identify the first plurality of documents, the first plurality of documents being a subset of the second plurality of documents.

In regarding to independent claims 58 and 75, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest generating an endpoint profile for each of the scanlines, and identifying text lines based on concentrations of up endpoints and down endpoints along scanlines of the document comprises means for reducing all but local maximums of the counts of up endpoints and the counts of down endpoints in respective endpoints profiles.

In regarding to independent claims 59 and 76, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest identifying a first scanline within a locality of scanlines that has the highest count of up

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endpoints, reducing the count of up endpoints associated with each scanline within the locality of scanlines except the first scanline, identifying a second scanline within the locality of scanlines that has the highest count of down endpoints, and reducing the count of down endpoints associated with each scanline within the locality of scanlines except the second scanline.

In regarding to independent claims 61 and 78, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest identifying text lines in a document based on concentrations of up endpoints and down endpoints along scanlines of the document, and generating a set of descriptors based on distance between selected up endpoints and selected down endpoints in the concentrations of up endpoints and down endpoints comprising defining an ascender zone and a descender zone for each of the text lines, the selected up endpoints being up endpoints in the ascender zone and the selected down endpoints being down endpoints in the descender zone.

In regarding to independent claims 64 and 81, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest performing spectral analysis on a bit profile to determine global statistics of a document comprises generating an estimation of a dominant line spacing in the document, and wherein generating an estimation of a dominant line spacing comprises generating a power spectrum density from the bit profile and calculating the estimation of the dominant line spacing from a peak value in the power spectrum density.

In regarding to independent claims 65 and 82, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest performing spectral analysis on a bit profile to determine global statistics of a document comprises generating an estimation of a proportion of the document, and wherein generating an estimation of a proportion of the document comprises generating a power spectrum density form the bit profile and calculating the estimation of the proportion of the document based on an energy under a peak value in the power spectrum density.

In regarding to independent claims 66 and 83, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest performing spectral analysis on a bit profile to determine global statistics of a document comprises generating an estimation of a location of text in the document, and wherein generating an estimation of a location of text in the document comprises applying a bandpass filter to the bit profile to generate a text energy profile and determining a centroid of the text energy profile to be the estimation of the location of text in the document.

In regarding to independent claims 68 and 85, Jain and/or Peairs taken either individually or in combination with other prior art of record fails to teach or suggest performing spectral analysis on a bit profile to determine global statistics of a document comprises generating an estimation of text concentration in the document, and wherein generating an estimation of text concentration in the document comprises applying a bandpass filter to the bit profile to generate a text energy profile and determining the estimation of the text concentration based on a length of the text energy profile.

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4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kaji et al. (EP 0 581 971 A1) discloses image scanner.

The article titled "Detection of Duplicates in Document Image databases" by Doermann et al. (Image and Vision Computing v16 n 12-13, August 24, 1998, p 907-920) discloses document image technology for scanning large numbers of document.

Inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Cheung whose telephone number is (703)-305-0084. The examiner can normally be reached on Monday – Thursday from 10:00 AM to 7:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Trammell, can be reached on (703) 305-9768.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

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The fax phone number for the organization where this application or proceedings is assigned are as follows:

(703) 872-9306 (Official Communications; including After Final
Communications labeled "BOX AF")

(703) 746-5619 (Draft Communications)

Hand delivered responses should be brought to Crystal Plaza Two, Room 1B03.

Mary Cheung
Patent Examiner
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March 9, 2005

A handwritten signature in black ink, appearing to read "Mary Cheung", is written over the typed name and title.